

## ABSTRACT

An electronic control, with a floating ac power supply, that compares the digital signals produced by connections between ac circuit nodes and digital nodes to determine whether path(s) in ac circuits containing the ac nodes are intact or open. The connections are made through passive components which limit the current between nodes to levels the digital devices can safely handle. An open path indicates to the control that a switching device is open, a connection has failed, or a that a load component has failed or is missing. An intact path indicates a closed switch or a present and presumably functional load component. Proper connections enable the control to detect the state of multiple paths while still being able to detect zero crossings. The method can determine the state of ac paths even if hot and neutral connections are inadvertently reversed.

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